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January 7, 2003

Paula H. Doughty, Manager
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Re: Response to Draft Amended Evaporation Pond Sludge Relocation/Disposal Proposal & Request for Formal Release of 10 Sections from Approved Mine Plan, Kennecott Utah Copper Corporation, Bingham Canyon Mine, M/035/002, Salt Lake County, Utah

Dear Ms. Doughty:

The Division has completed a review of your October 8, 2002 draft amended proposal to relocate the consolidated, sulfate-bearing sludge excavated from the South Jordan Evaporation Ponds to a permanent repository within the Copper Notch area of the Bingham Canyon Mine waste rock dumps. We are also providing supplemental analysis and comment on Kennecott Utah Copper Corporation's (KUCC's) previous request to release Sections 7, 17, 18 & 19, T3S, R1W, and Sections 13, 14, 15, 24, 25 & 28, T3S, R2W from the Bingham Canyon Mine permit (file number M/035/002).

After considerable discussion and evaluation of these proposals, we have determined that both of these proposals are refinements to the original Bingham Canyon Mine reclamation plan. Accordingly, each proposal will be categorized and processed as a permit amendment to the approved plan. Our preliminary findings, including requests for additional information and/or further clarification, are listed below under the specific proposal heading.

South Jordan Evaporation Pond Sediments Relocation Proposal

Background: *(reference - March 6, 2002 submittal)*

The clean-up of the evaporation pond sludge from within the South Jordan Evaporation Ponds was completed in 1995. This remediation and reclamation work was completed in accordance with the Administrative Order on Consent for the South Jordan Evaporation Ponds (USEPA Docket No. CERCLA-VIII-18), Record of Decision. The cleanup actions removed the highly contaminated pond sludge from approximately 1000 acres of this 1200-acre facility and disposed of this material within an EPA-approved waste dump repository on KUCC property. The less contaminated, non-hazardous sludge was consolidated into two stockpile areas that cover approximately 210 acres. The sulfate-bearing pond sludge

on this 210-acre parcel was mounded, covered with 3 to 5 feet of soil, and reseeded to stabilize the site. This 210-acre area is apparently the same as the 212-acre area referred to in the proposal received October 9, 2002.

Proposal:

Because of the residual sulfate content within the pond sludge, this 212-acre Consolidation Area would require certain land use restrictions and limitations in its current condition. KUCC is now proposing the complete removal of the sulfate-contaminated sludge in order to convert this property into a master planned community with low and high-density residential, commercial and light industrial development as part of the proposed post-mining land use.

According to the section of the proposal titled "South Jordan Evaporation Ponds Consolidation Area Infiltration and Leachability of Sulfate," stratigraphic layers within the Consolidation Area consist of, from top to bottom, 2.5-6 feet of topsoil and cap soil (1,109,960 cubic yards), 6-8 feet of mixed soil consisting of a mixture of sludge and soil material (2,138,284 cubic yards), and 4-8 feet of pond sediment or sludge (1,581,954 cubic yards) underlain by native soil.

KUCC has prepared a draft amended Operations and Maintenance (O&M) plan to remove and relocate the residual sulfate-bearing sediments (sludge) from the current 212-acre Consolidation Area to a proposed repository in a 30-acre area within the Copper Notch area of the Bingham Canyon Mine waste rock dumps, approximately 7 miles away. As part of the pond sludge removal process, six inches of mixed soil overlying the pond sludge and six inches to three feet of native soil underlying the pond sediment would be moved offsite with the pond sludge to the Copper Notch repository. About half of the remaining mixed soil presently capping the sludge material would be moved to a 168-acre location immediately south of the Consolidation Area with the balance of the mixed soils remaining at the Consolidation Area. Of the 168 acres outside the Consolidation Area, 92 acres would be irrigated and 76 acres would be covered with roads and houses. About 110 acres of the Consolidation Area would either be covered with an impermeable liner to prevent leaching of sulfates into the groundwater or would be left free of sulfate-bearing soils. The remainder of the Consolidation Area, 102 acres, would be left in a condition that sulfates could potentially leach.

KUCC submitted a work plan prepared by Harper Contracting, Inc., and this plan shows a new haul road being constructed between the disposal area and the ponds for the purpose of transporting the sludge from the Consolidation Area to the repository.

Construction and reclamation of the Copper Notch Repository is shown on a map included with the KUCC submittal but is not discussed in the text. The area is up gradient from the Eastside Collection System, and it will include a French drain system that will empty into this collection system.

Findings & Additional Information Requirements:

The Division does not foresee major problems with the sludge removal plan, but there are several questions that need to be answered before we can give final approval.

1. Topsoil and Cap Soil. The October 9th submittal indicates that the current configuration of the Consolidation Area capped units contains approximately 1,109,657 cubic yards of Topsoil & Cap Soil material overlying the 2,138,284 cubic yards of mixed soils. The amendment needs to give further details about the disposition of the topsoil and cap soil following removal of the sludge and the mixed and contaminated soils. The amended plan only says that the topsoil and cap soils will be stockpiled for use in the Master Planned Community (MPC). The models for leachability indicate the mixed soils will be covered with twelve inches of soil, but this should be specified in the plan if it is correct. If it is not correct, one of the assumptions for the leachability model, that there would be twelve inches of soil cover, has been violated. In addition, twelve inches of soil over 304 acres (212 in the Consolidation Area and 92 acres without roads or houses within the 168-acre area) accounts for only 490,453 cubic yards of the topsoil and cap soil, less than half of the total quantity. Please describe the plans for the balance of this material. Is the Division correct in its assumption that one foot of soil will be placed over the mixed soils? If not, how will the mixed soils be reclaimed? Is one foot of topsoil and/or cap soil adequate for revegetation of the mixed soils?

2. Topsoil in the 168-Acre Area. The amendment says nothing about salvaging soils within the 168-acre area where KUCC intends to place about half of the mixed soil. Please provide a plan for saving topsoil in this area.

3. Arsenic-Contaminated Soils. Page 3 of the infiltration model's section of the draft amendment says 325,305 cubic yards of native soil containing elevated arsenic levels will be removed offsite to the Copper Notch Repository, but gives no further details about this material. Is this material currently in the Consolidation Area? Will there be any special handling once it is taken to the repository?

4. Inconsistencies. There are several apparent inconsistencies within the amendment and between the amendment and a work plan prepared by Harper Contracting, Inc. Some of these are not significant and are not included here. Yardage calculations should agree between the different plans to avoid confusion. Among the discrepancies are:

a. On page three of the section of the amendment showing results from the infiltration modeling, the table indicates 454,565 cubic yards of native soil would be removed, but the paragraph before this table says six inches of soil from beneath the pond and an additional 325,305 cubic yards of arsenic-contaminated soil would be removed. This comes to 496,318 cubic yards. Please resolve or explain this discrepancy.

b. Page one of the section of the amendment showing results from the infiltration study says six inches to three feet of contaminated soil underlying the sludge will be removed,

but, as mentioned above, page three of this same section says six inches will be taken. Assuming the 325,305 yards of arsenic-laden soils are included in the 454,565 cubic yards of native soil that would be removed, this only allows for an average of about four inches of soil from under the sludge to be removed.

c. After removing an average of six inches of mixed soils, 1,967,271 cubic yards would remain. Half of this, 983,635 cubic yards, would go to the Consolidation Area and half to a 168-acre area outside the Consolidation Area. The Harper plan says 977,261 cubic yards would go to each area.

d. The Harper plan says contaminated subgrade soils below the existing evaporation ponds will either be 1) removed and hauled to roadways to be mixed with capping soils for the building up of future roadways, and/or, 2) hauled to the waste dump area at Copper Notch. This first option is not adequately described in the proposed amendment.

e. KUCC's March 6, 2002 letter says the ponds were capped with a minimum of 3 to 5 feet of clean topsoil and seeded. The Amended Plan states that the 212 acres of pond sediment was covered with 36 inches of clean topsoil and 6-12 inches of topsoil. The South Jordan Evaporation Pond Consolidation Area plan indicates that there is 2.5–6 feet of topsoil and 6–8 feet of mixed soil. These three plans need to agree on the amount of material that will need to be handled.

5. Haul Road. The plan from Harper shows a haul road being built to take the sludge and other material from the Consolidation Area to the disposal area, but the amendment does not have any information about this road. It appears the road would be built to facilitate achievement of the land use following mining and so would be considered part of the mining operation and a facility that would need to be included in the permit. Please provide appropriate permitting information for this road (i.e., construction details and a reclamation plan).

6. Reclamation at Copper Notch. Drawing 240-T-006 indicates topsoil will be salvaged, stockpiled, and replaced at the Copper Notch repository, but it is not clear how much soil will be salvaged and placed over the material in the repository. Topsoil will extend from the top edge of the pond sediment, across the top berm, and onto the natural ground surface, and the plan indicates 2.5 feet of soil will be placed on the eastern edge, or face, of the repository. These statements are not clear. Will there be 2.5 feet of soil over the entire area, or is this just for the face? If there will not be 2.5 feet of soil for the entire area, how much will there be? The amendment also needs to contain other details of the reclamation plan, such as surface treatments and a seed mix. Although the map includes much of the operation and reclamation plan for the repository, the information should be included as part of the text.

7. EPA/Department of Environmental Quality Approval. Your cover letter indicates a copy of the plan was sent to the EPA and the Utah Department of Environmental Quality for their review, and we assume they would need to approve it. Any approval we give would be conditional on approval from other appropriate agencies.

8. Other items. The assumption for annual precipitation at the Consolidation Area is 16.1 inches, but for the adjacent area, the assumption is 14.5 inches. Why the difference?

The sampling protocol in Appendix A indicates composite or individual samples may be taken depending on the size of the disturbance. Because the purpose of the sampling is to find potential problems, composite samples should not be taken. Composite samples would show averages over a larger area, but would not show spikes.

Until project funding is confirmed by KUCC's parent corporation to allow removal of the pond sludge, the Division will consider imposing certain restrictions and limitations on the post-mining land use for the Consolidation Area. These restrictions and limitations will be determined and coordinated with other appropriate regulatory agencies (e.g., EPA, DEQ, county, city).

Request for Release of 10 Sections from Bingham Canyon Permit

Proposal:

By letter dated March 6, 2002, KUCC requested the release of about 10 sections of land from within the boundaries of Division permit M/035/002. These sections are shown on attached Drawing 454-T-0010. Portions of the area were never affected by mining, but about 1200 acres were affected by excess water disposal facilities. Reclamation work on these facilities was completed in 1995 and included consolidation and reclamation of some material from the ponds and canals. The area also contains several monitoring wells, power lines, extraction wells, and pipelines used for monitoring and remediation of historic groundwater contamination within the area. One well and the associated pipeline presently supply water to the concentrator. KUCC's proposal says it may be necessary to establish additional monitoring, extraction or injection wells and other management facilities in these sections in the future.

Also within these sections are several sites that were impacted by mining prior to 1976 and which have been remediated, reclaimed, or received a no further action status. These sites were not included in the original notice of intention or the reclamation plan. According to the KUCC letter, the only area with a land use restriction is the Bastian Sink where no residential use is allowed. This land could be used for farming or industrial purposes.

Findings & Additional Information Requirements:

Four of the 10 sections of land under release consideration (sections 18 & 19, 13 & 24) were partially impacted by the evaporation ponds, and were permanently closed in 1987. KUCC is proposing construction of a major community and residential development plan (Kennecott Development Company - Sunrise Development Project) as the proposed post-mine land use for most of the area under the Division's release consideration. The construction of a housing development in this excess water disposal area conforms with the proposed post-mining land uses outlined in KUCC's approved 1978 reclamation plan (i.e., sand & gravel operations, farming, water storage, recreational, sludge or water disposal by others, residential, commercial or industrial development). Upon the completion of the proposed South Jordan,

Sunrise Development Plan, a total of 13,500 residential units and 45,000 people are projected to inhabit this community. A portion of this planned community will be placed over the area of the reclaimed evaporation ponds.

During a June 20, 2002 site inspection and meeting at KUCC offices, KUCC personnel presented to Division staff certain maps and aerial photos of the areas proposed to be released. We also discussed proposed postmining land uses for the areas. KUCC personnel stated that all of Sections 7, 17, and portions of 18, & 19, T3S, R1W, all of Section 25, and portions of Sections 14, 15,T3S, R2W, are not owned by KUCC. Although Sections 7, 17 and 25 fall within the Bingham Canyon permit area, they have reportedly not been impacted by any mining activities to date.

The Division can conditionally approve release of the areas that have not been affected by mining operations pending a site inspection to confirm the current conditions. The Division will also need to inspect reclaimed areas that will no longer be used for mining operations to determine whether these sites are in a condition capable of supporting the proposed postmining land use.

A portion of the area under release consideration is labeled, the *Bastian Sink* (see Dwg. No. 454-T-0010, entitled; *Areas Proposed To Be Released From DOGM Permit*, dated 1/14/02). KUCC's proposed community plat (see Figure 1, entitled; *Preliminary Diagram 22, Sunrise at South Jordan*, dated 9/16/02) indicates that "standard density" housing will be placed on a portion of this area. It is our understanding that the Bastian Sink area still contains areas of elevated lead and arsenic (~1200 ppm); therefore, some remedy to these health hazards will need to be completed before the Division will consider a release of this area under the designated post-mine land use proposal.

Drawing Number 454-T-0010 also shows a number of monitoring and extraction wells, pipelines, electrical transmission lines, access/maintenance roads, etc., that have been constructed by KUCC within the approved Bingham Canyon permit area boundaries, as part of the required mitigation measures under the State's NRDC settlement agreement. A larger scale, detailed, surface facilities map(s) showing the as-built locations, a description of the facilities, and the approximate disturbed area acreage associated with each facility is requested. These areas will remain under KUCC control until such time as they are reclaimed and released, or transferred to another party who will assume full liability and responsibility for their continued use. Will water monitoring and extraction wells be outside the area of housing developments? If new monitoring or extraction wells are to be drilled in the future how will these sites be integrated into the development plan? What monetary provisions has, or will, KUCC put in place to insure the continued long-term maintenance and ultimate reclamation of these facilities when no longer required?

The proposal says it may be necessary to establish additional monitoring, extraction, or injection wells or other management facilities in the future. What contingencies are there in the post-mining land use plan to provide for these potential facilities?

Portions of the Bingham Creek Channel have also been cleaned up and restored as a result of an EPA directive (Unilateral Administrative Order for Removal Action, Bingham Creek Channel (USEPA 1993; Docket No. CERCLA-VIII-93-10)). This is an area that was impacted by historic deposition of mill tailings. The proposed housing plat indicates that upon development of this area, the Bingham Creek

Channel will remain as a park or open space. No additional information is required to address this portion of the proposed land use plan at this time.

Conclusion:

The Division will require these draft proposals to be formatted as a consolidated plan to be reviewed as a permit amendment to the approved Bingham Canyon mining and reclamation plan. The Division will review and process the plans accordingly. Rule R647-4-111.5 requires the operator to leave the permitted area in a condition that is capable of supporting the post-mining land use. Before the Division can formally release these areas from KUCC's approved permit, we must make a positive finding confirming that each area has met this requirement for the post-mining land use(s) under consideration.

We will suspend further review of these proposals until we receive your revised response. If you have any questions in this regard, or wish to sit down and discuss this review, please contact me at (801) 538-5286, or Doug Jensen of the Minerals Staff at 538-5382. Thank you for your cooperation and patience in completing these permitting actions.

Sincerely,

D. Wayne Hedberg
Permit Supervisor
Minerals Regulatory Program

jb
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